

Serial No.: 09/753,357

Attorney's Docket No.:10559/381001/P10187

REMARKS

Claims 1-12 and 16-20 are pending, with claims 1, 10, 16 and 18 being independent. Reconsideration and allowance of the above-referenced application are respectfully requested.

Claims 1, 16, and 18 stand rejected under 35 U.S.C. 102(e) as allegedly being anticipated by Gargiulo et al. (US Publication No. 2002/0062381). Claim 10 stands rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Pitcher et al. (US Patent No. 6,370,142) in view of Gargiulo et al. These contentions are respectfully traversed.

The present claims are directed to systems and techniques for determining the presence of routers in a network. For example, independent claim 1 is directed to: "A method, comprising: setting a time interval between a first set of query messages to each of a plurality of routers to a number greater than a querier timeout period used by said plurality of routers, where said querier timeout period transitions each of said plurality of routers into a querier; revealing presence of said each of said plurality of routers sending a second set of query messages; and sending membership report messages to said plurality of routers."

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Gargiulo is directed to distributed network query systems and methods in which a first node on a network sends a query to other nodes on the network, and then either the first node or one of the other nodes listens for responses to the query and forms a list of responding nodes. (See Gargiulo at page 2, paragraphs [0022]-[0026].) In addition, Gargiulo describes a technique of delayed transmission used by the nodes that respond to the query in order to avoid a "packet storm".

"As described above, if each DQC [Distributed Query Client] node were to respond immediately to the query, a large amount of network traffic, called a packet storm, could be generated within the local subnet. To prevent this from happening, each DQC node does not respond immediately to the query. Instead, each DQC node can calculate a period of time (delay time) to wait before sending its Local Response."

(See Gargiulo at page 3, paragraph [0036].)

In the case where one of the responding nodes in a subnet creates the list of nodes in the subnet, this node can "calculate a query timeout period which represents the amount of time before the last node in the subnet will present its local response. That is, using the subnet mask, each DQC node can calculate the highest number IP address for the subnet and then using the delay constant, calculate how long it will take for the last node in the subnet to present its local response."

(See Gargiulo at page 3, paragraph 39.) This "query timeout period" of Gargiulo is a period of time in which to wait for

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responses to a previously sent query. Thus, contrary to what is stated in the Official Action with respect to independent claims 1 and 16, the "query timeout period" of Gargiulo is not a time interval between query messages set to a number greater than a querier timeout period used by routers, where the querier timeout period transitions each of the routers into a querier.

In fact, nothing in Gargiulo even suggests the possibility of routers being transitioned into queriers such that the presence of non-querier multicast routers is revealed. The Official Action ignores this deficiency in Gargiulo by suggesting that when the nodes of Gargiulo send their responses to the original query, this constitutes a router sending a query. (See the Official Action at page 3.) This line of reasoning is unsupportable because it is inconsistent with the disclosure of Gargiulo, and additionally, it disregards the plain meaning of the terms "query" and "response".

In support of the assertions regarding the teachings of Gargiulo, the Official Action cites paragraph [0041], which reads as follows:

"The embodiment in which the DQS [Distributed Query Server] NODE sends information designating a node to create the list of responding nodes will now be further described by reference to FIG. 13A. Each DQC node (32a-32n) receives the query from DQS NODE 30 (Step S71). The query may include the subnet mask, a delay constant, and information identifying the node that is to create the list of responding nodes. Each node determines an answer to the query (Step S72) and calculates a period to wait before

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responding (Step S73), using its own IP address and the delay constant. The node designated to create the list of responding nodes determines the highest address in the subnet (Step S74) and calculates the query timeout period (Step S75) and listens for responses (Step S76) until the query timeout period has expired. Each node sends its response to the designated node (Step S77) using, for example, IP Multicasting. The designated node then builds the list of responding nodes (Step S78) and after the query timeout period has expired, transfers the list to the DQS node (Step S79)."

With respect to independent claims 1 and 16, the above paragraph says nothing about setting a time interval between query messages nor about transitioning routers into queriers, as claimed. With respect to independent claim 18, the paragraph above says nothing about holding back at least one query message and forcing one or more non-querier multicast routers to assume a querier state, as claimed. Likewise, with respect to independent claim 10, the cited paragraph says nothing about setting a time interval between a set of query messages to a number greater than a querier time out period so that said each switch port reveals its state, as claimed.

In view of the above, withdrawal of the rejections of independent claims 1, 10, 16 and 18 over Gargiulo is respectfully requested. These claims are patentable over the art of record, and thus allowance of these claims is respectfully requested.

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Claims 1-12 and 16-20 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable over Pitcher et al. in view of LeMaire et al. (US Patent No. 6,169,741). This contention is respectfully traversed.

Pitcher detects querier multicast routers by listening for IGMP (Internet Group Management Protocol) membership queries, which are periodically generated by the querier multicast routers. (See Pitcher at col. 10, lines 26-28, and col. 1, line 63 to col. 2, line 17.) However, there is no suggestion in Pitcher that the routers are transitioned into queriers such that the presence of non-querier multicast routers is revealed. The Official Action acknowledges this fact and relies on LeMaire for this feature.

LeMaire describes a method and apparatus for transparent intermediate system based filtering on LAN (Local Area Network) multicast packets. However, LeMaire does not transition all non-queriers into queriers because received MRRDPs (Multicast Router-to-Router Discovery Packets) are used to identify router ports in addition to received IGMP Query packets. (See LeMaire at col. 11, lines 49-60.) The Official Action states that, "all multicast routers transmit multicast router-to-router discovery packets (MRRDPs), hence transitioning all routers into a querier." But this statement disregards the fact that a non-

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querier router can transmit any number of MRRDPs and still remain a non-querier.

LeMaire makes this clear when describing MRRDPs and how they are different from IGMP Query packets; IGMP Query packets are suppressed in a multicast router once it receives an IGMP Query packet from another multicast router with a lower network address, whereas MRRDP packets are not suppressed in this manner. (See LeMaire at col. 5, line 44 to col. 6, line 13; and in particular, col. 6, lines 7-13.) Thus, a non-querier router (e.g., a router that has stopped sending IGMP Query packets because they have been suppressed in accordance with IGMP) can nonetheless continue to send MRRDPs. The time-out interval used in LeMaire is the maximum of the periodic rates at which various MRRDP packets are typically issued by multicast routers (see LeMaire at col. 11, lines 54-60), which is not equivalent to a querier time out period as claimed. Therefore, a router port can be identified in LeMaire during the router discovery phase based on a received MRRDP packet even though the sending non-querier router was never transitioned into a querier router.

Thus, with respect to independent claim 1, the art of record fails to teach or suggest, either alone or in combination, "A method, comprising: setting a time interval between a first set of query messages to each of a plurality of routers to a number greater than a querier timeout period used

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by said plurality of routers, where said querier timeout period transitions each of said plurality of routers into a querier; revealing presence of said each of said plurality of routers sending a second set of query messages; and sending membership report messages to said plurality of routers." (Emphasis added.)

With respect to independent claim 10, the art of record fails to teach or suggest, either alone or in combination, "An IGMP switch system, comprising: a plurality of routers to route Internet Protocol (IP) data, said plurality of routers also generating query messages; a plurality of hosts to send and receive said IP data, said plurality of hosts also generating report messages; and an IGMP pruning switch having a plurality of switch ports, said switch ports to provide interfacing of said plurality of hosts and routers, where said IGMP pruning switch provides query messages and report messages to be transferred in such states as to allow determination of presence of said plurality of routers and hosts; wherein said pruning switch determines whether each switch port is a host or router port in a discovery state by setting a time interval between a set of query messages to a number greater than a querier timeout period so that said each switch port reveals its state." (Emphasis added.)

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With respect to independent claim 16, the art of record fails to teach or suggest, either alone or in combination, "An apparatus comprising a machine-readable storage medium having executable instructions that enable the machine to perform operations comprising: setting a time interval between a first set of query messages to a number greater than a querier timeout period used by a plurality of routers, where said querier timeout period transitions each of said plurality of routers into a querier; revealing presence of said each of said plurality of routers by receiving a second set of query messages from said plurality of routers; and sending membership report messages to said plurality of routers." (Emphasis added.)

With respect to independent claim 18, the art of record fails to teach or suggest, either alone or in combination, "A network switch configured to perform operations comprising: revealing one or more non-querier multicast routers by holding back at least one query message and forcing the one or more non-querier multicast routers to assume a querier state; and sending membership report messages to the revealed one or more non-querier multicast routers." (Emphasis added.)

For all of the above reasons, independent claims 1, 10, 16 and 18 are patentable over the art of record. Dependent claims 2-9, 11-12, 17 and 19-20 are patentable based on the above arguments and their own merits.

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It is believed that all of the pending claims have been addressed. However, the absence of a reply to a specific issue or comment does not signify agreement with or concession of that issue or comment. Because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper.

It is respectfully suggested for all of these reasons, that the current rejection is totally overcome; that none of the cited art teaches or suggests the features which are claimed, and therefore that all of the pending claims, 1-12 and 16-20, should be in condition for allowance. A formal notice of allowance is thus respectfully requested.

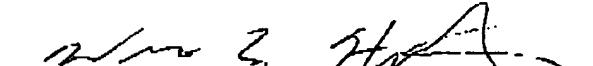
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Respectfully submitted,

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